

REMARKS

The claims now pending in this application are claims 1-4, 6-12, and 25, as well as newly presented dependent claims 26-31.

As noted by the Background of the Invention, cryogenic front-ends “must deal with a whole host of thermal management issues.” (paragraph [0005]). Applicant’s unique, disclosed and claimed combination of compositions and structural features results in an improved thermal management system and overall improved cryogenic receiver front-end. Applicants have clarified that the heat rejector includes c-shaped recesses, and that “the c-shaped recesses (are) adapted to provide contact with heat pipes, the heat rejector surrounding the cryocooler and being braised to the cryocooler adjacent the region generating compression heat”. Further, claim 1 recites that “the c-shaped recesses substantially surround the heat rejector”. The originally filed specification at paragraph [0041] expressly noted that a “heat rejector 32 surrounds the cryocooler 24 and is used *to transfer the heat of compression* generated by the cryocooler 24 to ambient as described in more detail below.” While the transferred heat may result from other sources, it is the heat of compression that most critically must be transferred. In yet another aspect, the specification notes that by utilizing a thermally conductive material such as copper, which has been braised, the material becomes particularly pliable and “can form an excellent thermal contact with the heat pipes 48”. (paragraph [0049]). In yet a further aspect, the “c-shaped recess” is described with regards to Fig. 8A, 8B and 8C. As described in paragraph [0052], as well as can be seen from the structures of Figs. 8A-C, the c-shaped recess substantially surrounds the heat rejector in those portions where there is contact. As noted in paragraph [0052], “In the clamped state, there is no gap between the outer surface of the heat pipe 48 and the inner surface of the c-shaped recess 58 as the recess has fully conformed to the outer surface of the heat pipe 48. It should be understood that the pliable nature of the c-shaped recess 58 allows excellent thermal contact between the heat pipe 48 and the heat

rejector 32 even if there are small variations or imperfections in the exterior surface of the heat pipe 48".

The new dependent claims are added without the addition of new matter. Claims 26 and 27 are clearly supported at page 11, lines 11-13 ("The cryocooler 24 is preferably a linear cryocooler 24 such as a sterling cryocooler 24."); claims 29-30 are clearly supported at least by paragraph [0053] Figs. 8A-C and Fig. 9 ("As seen in Fig. 9, the heat pipe 48 is bent into an elbow shape. For the embodiment with the cryogenic receiver front-end 2, the heat pipe 48 is preferably bent to an angle greater than 90° to utilize gravity during the liquidation portion of the heat pipe 48 cycle."); and claim 31 is clearly supported at least by paragraph [0042] and Fig. 10 ("The vertical orientation is used to create a chimney effect with hot air rising between adjacent fins 36 to the outside environment.")

Applicant would request that the claims be allowed. Should any matter remain, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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